Fig. 2

enable the mobile terminal device to receive and decode the high-speed packet data in the Downlink Shared Channel (DSCH) by using this received and decoded downlink signaling information. A confirmation may be transmitted to the high-speed downlink packet sender, such as a Node B. The confirmation may comprise an acknowledge / negative acknowledge

5   (ACK/NAK) and measurement report and preferably transmitted via the Uplink High-Speed Downlink Packet Access (HSDPA) Information Channel (UL-HICH).

This specification contains the description of implementations and embodiments of the present invention with the help of examples. It will be appreciated by a person skilled in the art, that the

10   present invention is not restricted to details of the embodiments presented above, and that the invention can be also implemented in another form without deviating from the characteristics of the invention. The embodiment presented above should be considered as illustrative, but not restricting. Thus, the possibilities of implementing and using the invention are only restricted to the enclosed claims. Consequently, various options of implementing the invention as determined

15   by the claims, including equivalent implementations, also belong to the scope of the invention.

According to the address coding procedure, the addresses "0001", "0010" and "0011" may be assigned to the corresponding mobile terminal devices UE 11, UE 12 and UE 13.

A fourth group designated as group 4 may comprise exemplary six mobile terminal devices and the mobile terminal devices may be designated as UE 14, UE 15, UE 16, UE 17, UE 18 and UE 19, respectively. According to the address coding procedure, the addresses "0001", "0010", "0011" "0100" "0101" and "0111" may be assigned to the corresponding mobile terminal devices UE 14, UE 15, UE 16, UE 17, UE 18 and UE 19.

A fifth group designated as group 5 may comprise exemplary four mobile terminal devices and the mobile terminal devices may be designated as UE 20, UE 21, UE 22, UE 23 and UE 24, respectively. According to the address coding procedure, the addresses "0001", "0010", "0011", "0100" and "0101" may be assigned to the corresponding mobile terminal devices UE 20, UE 21, UE 22, UE 23 and UE 24.

The plurality of mobile terminal devices are divided into a plurality groups. The number of groups may and the division thereupon may be performed dynamically or statically. For example, the grouping (arrangement and/or number of groups) may be based on traffic load or N channel Hybrid Automatic Repeat Request (HARQ) scheme.

The following Fig. 3 may represent a time flow diagram according to an embodiment of the method of the present invention. The time flow diagram is based on the grouping presented above according to Fig. 2.

Fig. 3 shows frame diagram of a high data transmitting situation according to an embodiment of the invention. The five groups each comprising mobile terminal devices, shown in Fig. 2 may listen to the Paging Indicator Channel (PICH). According to this embodiment of the invention, the mobile terminal devices of one group may listen to the Paging Indicator Channel (PICH) every fifth frame. Correspondingly, group 1 may listen to frame 1, group 2 to frame 2, group 3 to frame 3, group 4 to frame 4 and group 5 to frame 5. Beginning with frame 6 group 1 may listen again thereto and further group 2 may follow in listening to frame 7. This sequencing of the groups may be continued. Analog to the grouping of the mobile terminal devices, the period of
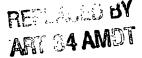
The usage and functionality connected to the addresses "0000" and "1111" is the same like described in combination with the first address coding procedure. A coded address "0000" may indicate that no one of the mobile terminal devices is addressed to initiate a data transmission. Correspondingly, an address "1111" may indicate an initialization of a data transmission to all

5   four mobile terminal devices of the group.

In the following description, the address coding of the mobile terminal devices may be based on the first address coding mentioned and described above. The below presented description may be employed in a similar manner in combination with the above mentioned second address coding.

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Fig. 2 shows a grouping of a plurality of mobile communication terminal according to an embodiment of the invention. A plurality of mobile terminal devices is shown in Fig. 2. The mobile terminal devices are grouped in five separate groups each comprising a subset of plurality of mobile terminal devices. The grouping and the number of mobile terminal devices within the

15   different groups is exemplary and the grouping may performed in another arrangement. Since the address coding is based on the first address coding procedure the different groups may comprise maximal fourteen mobile terminal devices. Further, the number of groups may also be exemplary and not limited to the depicted five different groups.

20   A first group designated as group 1 may comprise exemplary four mobile terminal devices and the mobile terminal devices may be designated as UE 1, UE 2, UE 3 and UE 4, respectively. According to the address coding procedure, the addresses "0001", "0010", "0011" and "0100" may be assigned to the corresponding mobile terminal devices UE 1, UE 2, UE 3 and UE 4.

25   A second group designated as group 2 may comprise exemplary six mobile terminal devices and the mobile terminal devices may be designated as UE 5, UE 6, UE 7, UE 8, UE 9 and UE 10, respectively. According to the address coding procedure, the addresses "0001", "0010", "0011" "0100" "0101" and "0111" may be assigned to the corresponding mobile terminal devices UE 5, UE 6, UE 7, UE 8, UE 9 and UE 10.

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A third group designated as group 3 may comprise exemplary three mobile terminal devices and the mobile terminal devices may be designated as UE 11, UE 12 and UE 13, respectively.

Claims

1. Method for High-Speed Downlink Packet Access (HSDPA) signaling for Time Division Duplex (TDD) mode of a wireless communication system, comprising the following steps:

5   a base station (node B) sending indication information to a mobile terminal device (UE);

the mobile terminal device (UE) identified by the said indication information receiving signaling information;

said mobile terminal device, based on the said signaling information, decoding packet data information;

10   characterized by the steps of :

- including a High-Speed Indicator (HI) into the slot structure of a Paging Indicator Channel (PICH), said High-Speed Indicator (HI) comprising a plurality of identification bits, each identification bit being assigned,

- said High-Speed Indicator (HI) designating a specific mobile terminal device accessible

15   in a downlink channel.

2. Method according to claim 1, wherein said plurality of identification bits are four identification bits arranged in two pairs each of two bits on either side of and adjacent to a midamble area of said Paging Indicator Channel (PICH).

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3. Method according to anyone of the preceding claims, comprising following further steps:

- dividing a plurality of mobile terminal devices upon a plurality of groups. ·

4. Method according to claim 3, comprising following further steps:

25   - assigning certain periods of time to each group,

wherein each mobile terminal device of a group receives data transmitted within said periods of time assigned to said respective group via said Paging Indicator Channel (PICH).

5. Method according to claim 3 or claim 4, comprising following further steps:

30   - assigning a High-Speed Indicator (HI) to each mobile terminal device of a group.

6. Method according to anyone of the claims 3 to 5, wherein said periods of time of a group are assigned according to the data traffic of the group..

7. Method according to anyone of the preceding claims, comprising following further steps:
   - receiving information on said Paging Indicator Channel (PICH) by a mobile terminal device.

8. Method according to anyone of the preceding claims, comprising the following further steps:
   - receiving signaling information on a High-Speed Shared Control Channel (HS-SCCH) by a mobile terminal device.

9. Method according to claim 7, comprising the following further steps:
   - receiving and decoding data packets on a Downlink Shared Channel (DSCH) by a mobile terminal device,
   wherein the receiving and decoding step employs said signaling information received on said High-Speed Shared Control Channel (HS-SCCH).

10. Method according anyone of the preceding claims, comprising following further steps:
    - transmitting transmission related information.

11. Method according anyone of the preceding claims, wherein said identification bits codes a binary address of a mobile terminal device.

12. Method according claim 1 to 11, wherein said identification bits codes a logical address of a mobile terminal device.

13. Method according anyone of the preceding claims, wherein said dividing a plurality of mobile terminal devices upon a plurality of groups is based on the data traffic.

14. Method according anyone of the preceding claims, wherein said dividing a plurality of mobile terminal devices upon a plurality of groups is based on an N channel Hybrid Automatic Repeat Request (HARQ) scheme.

15. Computer program for executing method for High-Speed Downlink Packet Access (HSDPA) for Time Division Duplex (TDD) mode of a wireless communication system, comprising program code means for carrying out the steps of anyone of claims 1 to 14 when said

5   program is run on a computer, a network device, a mobile device, or an application specific integrated circuit.

16. Computer program product comprising program code means stored on a computer readable medium for carrying out the method for High-Speed Downlink Packet Access (HSDPA) for

10   Time Division Duplex (TDD) mode of a wireless communication system of anyone of claims 1 to 14 when said program product is run on a computer, a network device, a mobile device, or an application specific integrated circuit.

17. Mobile terminal device for High-Speed Downlink Packet Access (HSDPA) for Time

15   Division Duplex (TDD) mode of a wireless communication system, comprising means adapted to perform a method for High-Speed Downlink Packet Access (HSDPA) for Time Division Duplex (TDD) mode of a wireless communication system according to anyone on the claims 1 to 14.

20   18. Wireless communication system for High-Speed Downlink Packet Access (HSDPA) for Time Division Duplex (TDD) mode, comprising means adapted to perform a method for High-Speed Downlink Packet Access (HSDPA) for Time Division Duplex (TDD) mode of a wireless communication system according to anyone on the claims 1 to 14.